

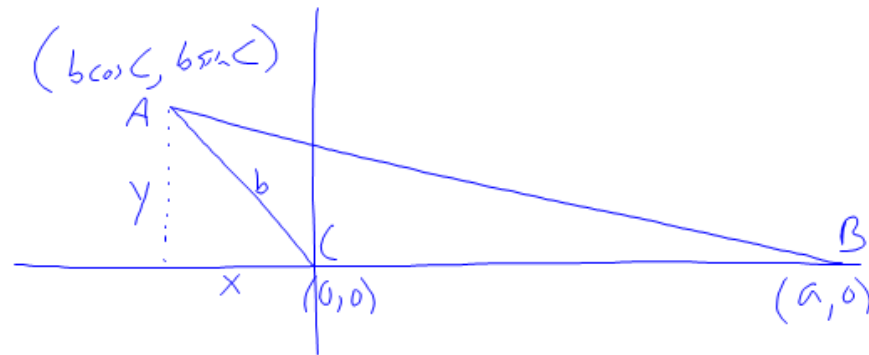
Find length of AB

$$a^2 + b^2 = c^2$$

$$4^2 + 3^2 = c^2$$

$$16 + 9 = c^2$$

$$\sqrt{25}$$



$$\sin C = \frac{y}{b}$$

$$y = b \sin C$$

$$\cos C = \frac{x}{b}$$

$$x = b \cos C$$

$$(b \cos C - a)(b \cos C - a)$$

$$\text{length } AB = \sqrt{(b \cos C - a)^2 + (b \sin C)^2}$$

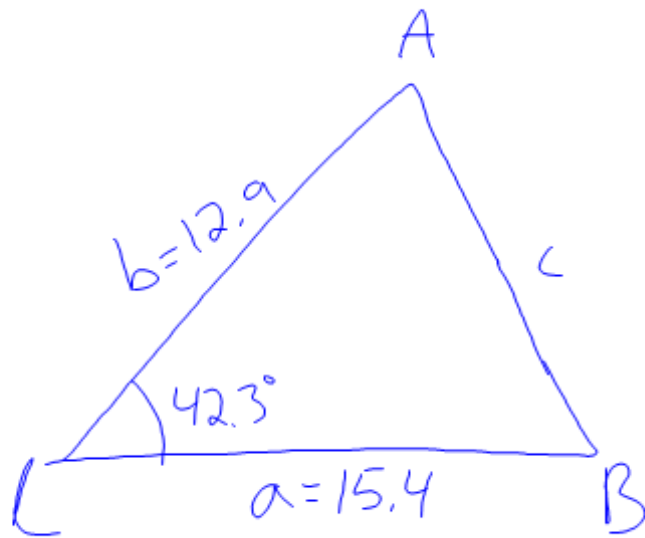
$$AB^2 = (b \cos C - a)^2 + (b \sin C)^2$$

$$= \underline{b^2 \cos^2 C} - 2ab \cos C + a^2 + \underline{b^2 \sin^2 C}$$

$$= a^2 + b^2 (\cos^2 C + \sin^2 C) - 2ab \cos C$$

$$AB^2 = a^2 + b^2 - 2ab \cos C$$

$$\boxed{c^2 = a^2 + b^2 - 2ab \cos C} \quad \text{Law of Cosines}$$



$$c^2 = a^2 + b^2 - 2ab \cos C^\circ$$

$$c^2 = 12.9^2 + 15.4^2 - 2(12.9)(15.4)\cos(42.3^\circ)$$

$$c^2 = 109.7$$

$$c = 10.47$$

5

$$c^2 = a^2 + b^2 - 2ab \cos C^\circ$$

$$a^2 = b^2 + c^2 - 2bc \cos A^\circ$$

$$b^2 = a^2 + c^2 - 2ac \cos B^\circ$$

Two sides, cosine  
of angle between  
them

SAS, SSS problems <sup>Law</sup> cosines, others <sup>Law of</sup> sines, AAA doesn't work

Sect. 7.3 # 1-7, 13-16, 40, 41, 49, 51, 52, 56